



# 37

## FACILITY PRICING

### Definition:

*This TCM would double the current tolls for all vehicles getting both on and off the PA Turnpike (I-276) between the Route 100 and Route 1 interchanges, and the Northeast Extension (PA 9) from its origin to the interchange at Quakertown, during the AM peak period (6:30 to 9:00) and the PM peak period (4:00 to 6:30). (The measure would be complementary to the Cross-County Metro, if and when it is built.)*

### Travel and Emissions Analysis:

This measure was analyzed by DVRPC by adjusting the toll links in question to have a greater impedance and re-running the assignment and emissions models. The links were identified, and the assignment was re-run without re-running the mode choice/distribution model (thus, no effect on VMT).

### Cost Methodology:

This measure would result in increased revenues from higher SOV tolls, which would then be used to cover reduced tolls for HOV users plus increased administrative costs. It is assumed that the toll structure will be adjusted to just cover the costs/subsidy increases, thus the program will operate *revenue neutral*.

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### 3 RESULTS

The analysis clearly reveals that certain types of strategies are more effective than others. Of the 37 strategies tested, the pricing measures (\$.84 gas tax, \$.04 per VMT tax, \$3/day regional parking charge, and \$3/day parking tax in the CBD) show the most emissions reduction potential and are the most cost-effective (in fact, these strategies are revenue-producing). Also exhibiting high emissions reduction potential and cost-effectiveness are the ETRP and related strategies, educational efforts, and low-emission vehicles/fuels. Transit capital improvements, such as rail service extensions and restorations, have the lowest emission reduction potential and the lowest near-term cost-effectiveness. The analysis highlights various types of strategies that could be classified as moderately effective, including bicycle improvements, advanced signal system improvements, ramp metering, limits on new parking facilities, and removing pre-1980 vehicles.

When comparing the effectiveness of the measures using the figures presented below, it is important to also be familiar with the project definition and scope provided in the worksheets. The test scenarios vary greatly in scale and are not always directly comparable. Some of the sample applications are applied region-wide and have a greater potential for impact than do those which are more localized.

The results of the analysis are presented in the following summary tables. Keep in mind that the figures are estimates and not precise measurements.

Table 6 provides the travel and emissions impacts for each test scenario for an average summer weekday. Changes in vehicle trips and transit trips for home-based work travel and total travel are given along with changes in vehicle miles of travel. The change in emissions is shown in kilograms for VOC, CO, and NO<sub>x</sub>.

Table 7 summarizes costs. Annual public sector and private sector costs and revenues are given, along with total cost-effectiveness in dollars per vehicle miles of travel reduced and dollars per ton of emissions reduced.

Table 8 groups the test scenarios by strategy type and provides their changes in annual VMT and emissions, and their cost-effectiveness. This purpose of this table is to highlight the range of impact and effectiveness within a particular class of strategies.

Table 9 ranks the measures in order of their annual emissions reduction while Table 10 ranks them by total cost-effectiveness.

Table 11 is a matrix categorizing each measure according to its emissions reduction potential and its cost-effectiveness. The emissions reduction levels are listed in the far left column and range from more than 1,000 annual tons reduced to 1 to 10 annual tons reduced. Cost-effectiveness levels are shown across the top row of the table and range from revenue-producing to more than \$100,000 per ton. Each TCM that was tested is placed in the appropriate box. The measures with the most



emissions reduction potential and the highest cost-effectiveness fall into the upper left corner of the table, while the ones with the least emissions reduction potential and the lowest cost-effectiveness fall into the lower right corner.





**Table 6**  
**Travel and Emissions Impact Summary for an Average Summer Weekday**

		CHANGE IN HOME-BASED WORK TRAVEL		CHANGE IN TOTAL TRAVEL		CHANGE IN TOTAL VMT	CHANGE IN EMISSIONS		
		Vehicle Trips % Change	Transit Trips % Change	Vehicle Trips % Change	Transit Trips % Change	Veh-Miles % Change	kg of VOC % Change	kg of CO % Change	kg of NO <sub>x</sub> % Change
	1996 Base Condition 5-County PA Region Only	2,066,000 (a)	456,000 (a)	10,092,000 (a)	764,000 (a)	71,701,500 (b,c)	79,500 (b)	510,500 (b)	111,000 (b)
ID #	Test Scenario								
TRAFFIC FLOW IMPROVEMENTS									
1	Advanced signal systems on 50 miles of the most congested 4- lane arterials	Not Calculated	Not Calculated	Not Calculated	Not Calculated	-70,544 -0.1	-135 -0.2	-545 -0.1	-145 -0.1
2	Advanced signal system improvements - Comprehensive system for Philadelphia CBD	Not Calculated	Not Calculated	Not Calculated	Not Calculated	-7,336 -0.0	-32 -0.0	-227 -0.0	-25 -0.0
3	Congestion and incident management systems on interstates within Philadelphia and the four suburban counties	Not Calculated	Not Calculated	Not Calculated	Not Calculated	+12,472 0.0	-149 -0.2	-638 -0.1	6 0.0
4	Ramp metering	Not Calculated	Not Calculated	Not Calculated	Not Calculated	-43,216 -0.1	-374 -0.5	-3,159 -0.6	-31 -0.0



## TRANSPORTATION CONTROL MEASURES

		CHANGE IN HOME-BASED WORK TRAVEL		CHANGE IN TOTAL TRAVEL		CHANGE IN TOTAL VMT	CHANGE IN EMISSIONS		
		Vehicle Trips % Change	Transit Trips % Change	Vehicle Trips % Change	Transit Trips % Change	Veh-Miles % Change	kg of VOC % Change	kg of CO % Change	kg of NO <sub>x</sub> % Change
	1996 Base Condition 5-County PA Region Only	2,066,000 (a)	456,000 (a)	10,092,000 (a)	764,000 (a)	71,701,500 (b,c)	79,500 (b)	510,500 (b)	111,000 (b)
ID #	Test Scenario								
5	Enforce adherence to 55 mph speed limit on PA Turnpike	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	-161 -0.2	-5,230 -1.0	-567 -0.5
TRANSIT OPERATIONS									
6	Restoration of service on regional rail lines	-1,000 -0.0	1,267 0.3	-1,255 -0.0	1,998 0.3	-10,360 -0.0	-10 -0.0	-61 -0.0	-18 -0.0
7	Extension of Route 66 trackless trolley	-154 -0.0	171 0.0	-278 -0.0	364 0.0	-1,360 -0.0	-2 -0.0	-10 -0.0	-3 -0.0
8	Improvement to express service on regional rail lines	-368 -0.0	466 0.1	-505 -0.0	731 0.1	-14,752 -0.0	-14 -0.0	-87 -0.0	-26 -0.0
9	Systemwide fare reductions of 10%	-4,693 -0.2	5,505 1.2	-9,497 -0.1	13,164 1.7	-73,488 -0.1	-84 -0.1	-506 -0.1	-118 -0.1
10	Systemwide fare reductions of 20%	-8,275 -0.4	9,696 2.1	-16,762 -0.2	23,473 3.1	-144,016 -0.2	-178 -0.2	-977 -0.2	-238 -0.2
11	Systemwide fare reductions of 50%	-19,970 -1.0	23,409 5.1	-42,071 -0.4	58,884 7.7	-362,432 -0.5	-425 -0.5	-2,460 -0.5	-622 -0.6
12	Improve suburban bus service	-5,373 -0.3	6,161 1.4	-7,248 -0.1	9,216 1.2	-54,000 -0.1	-61 -0.1	-393 -0.1	-92 -0.1